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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,987	10/19/2001	Yuuzo Kamiguchi	215231US2RD	7487
22850	7590	06/07/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			BLOUTIN, MARK S	
			ART UNIT	PAPER NUMBER
			2653	13

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/981,987

Applicant(s)

KAMIGUCHI ET AL.

Examiner

Mark Blouin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-31 is/are pending in the application.
- 4a) Of the above claim(s) 5,7,9-13 and 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,8,14 and 19-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**Detailed Action**

***Response to Amendment***

- The reply filed on March 26, 2004, was applied to the following effect: Claims 1,2, and 8 have been amended, Claim 6 has been cancelled, and Claims 22-31 are newly added.

***Claim Rejections - 35 USC § 112***

1. The rejection is moot since Claim 6 has been cancelled.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1- 3, 8, and 19-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Dieny et al (USPN 6,462,641).
4. Regarding Claims 1,2, and 21, Dieny et al shows (Fig. 1) a magnetoresistance effect element (40) comprising a magnetoresistance effect film including a magnetization fixed layer (14) having a ferromagnetic film in which the direction of magnetization is substantially fixed to one direction, a magnetization free layer (12) having a ferromagnetic film in which the direction of magnetization varies in response to an external magnetic field, and a non-magnetic intermediate layer (24) provided between the magnetization fixed layer and the magnetization free layer, a pair of electrodes (30,32) which are electrically connected to the magnetoresistance

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effect film for applying a current in a direction perpendicular to the plane of the magnetoresistance effect film, and a resistant regulating layer (16) which contains an oxide, a nitride, a fluoride, a carbide or a boride as a principal component (Col 5, lns 61-64) for restricting the quantity of a sense current passing through the magnetoresistance effect film, wherein the resistance regulating layer is stacked on the non-magnetic metallic layer (Col 6, lns 10-18 - Cu), the resistance regulating area formed in the non-magnetic intermediate layer or on the interface between the non-magnetic intermediate layer and at least one of the magnetization fixed layers and the magnetization free layer and contains a metal including at least one of Cu, Au, Ag, Ru, Ir, Re, Rh, Pt, Pd, Al and Os.

5. Regarding Claims 3,22, and 24-31, Dieny et al shows the resistance regulating area has pin holes at a rate of hole area which is 50% or less, in that pin holes are inherent in the formation and oxidation of an insulating barrier.

6. Regarding Claims 8 and 23 Dieny et al shows (Fig. 1) a magnetoresistance effect element, wherein the resistance regulating layer contains, as a principal component, at least one of oxides, nitrides, fluorides, carbides or borides of an element selected from the group consisting of B, Si, Ge, Ta, W, Nb, Al (Col, lns 61-64), Mo, P, V, As, Sb, Zr, Ti, Zn, Pb, Th, Be, Cd, Sc, La, Y, Pr, Cr, Sn, Ga, Cu, In, Rh, Pd, Mg, Li, Ba, Ca, Sr, Mn, Fe, Co, Ni, and Rb.

7. Regarding Claims 19-20, Dieny et al shows (Col 3, lns 3-6) a magnetic recording and/or reproducing system which has a magnetic head, which is capable of reading magnetic information stored in a magnetic recording medium.

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***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dieny et al (USPN 6,462,641) in view of Sun et al (USPN 6,574,079).

10. Regarding Claim 4, Dieny et al shows all the features described, *supra*, but does not show the resistance regulating layer formed of two kinds or more of metallic elements.

Sun et al shows (abstract – metallic alloy layer) the resistance regulating layer formed of two kinds or more of metallic elements.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the resistance regulating layer of Dieny et al with the resistance regulating layer as taught by Sun et al. The rationale is as follows: One of ordinary skill in the art at the time the invention was made would have been motivated to replace the resistance regulating layer of Dieny et al with the resistance regulating layer as taught by Sun et al in order to maintain low resistance and high sensitivity, as they are art recognized equivalents.

***Response to Arguments***

11. Applicant's arguments with respect to claims 1-4,8,14,19, and 20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gallagher et al (USPN 6,226,160) is cited to show the inherency of pin holes in a barrier layer.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Blouin whose telephone number is (703) 305-5629. The examiner can normally be reached M-F, 6:00 am – 3:30 pm.

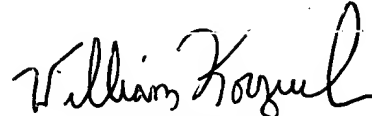
If attempts to reach the examiner by telephone are unsuccessful the examiner's supervisor, William Korzuch can be reached at (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314 for regular and After Final communications.

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Any inquiry of general nature or relating to the status of application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.



Mark Blouin  
Patent Examiner  
Art Unit 2653  
May 28, 2004



WILLIAM KORZUCH  
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